

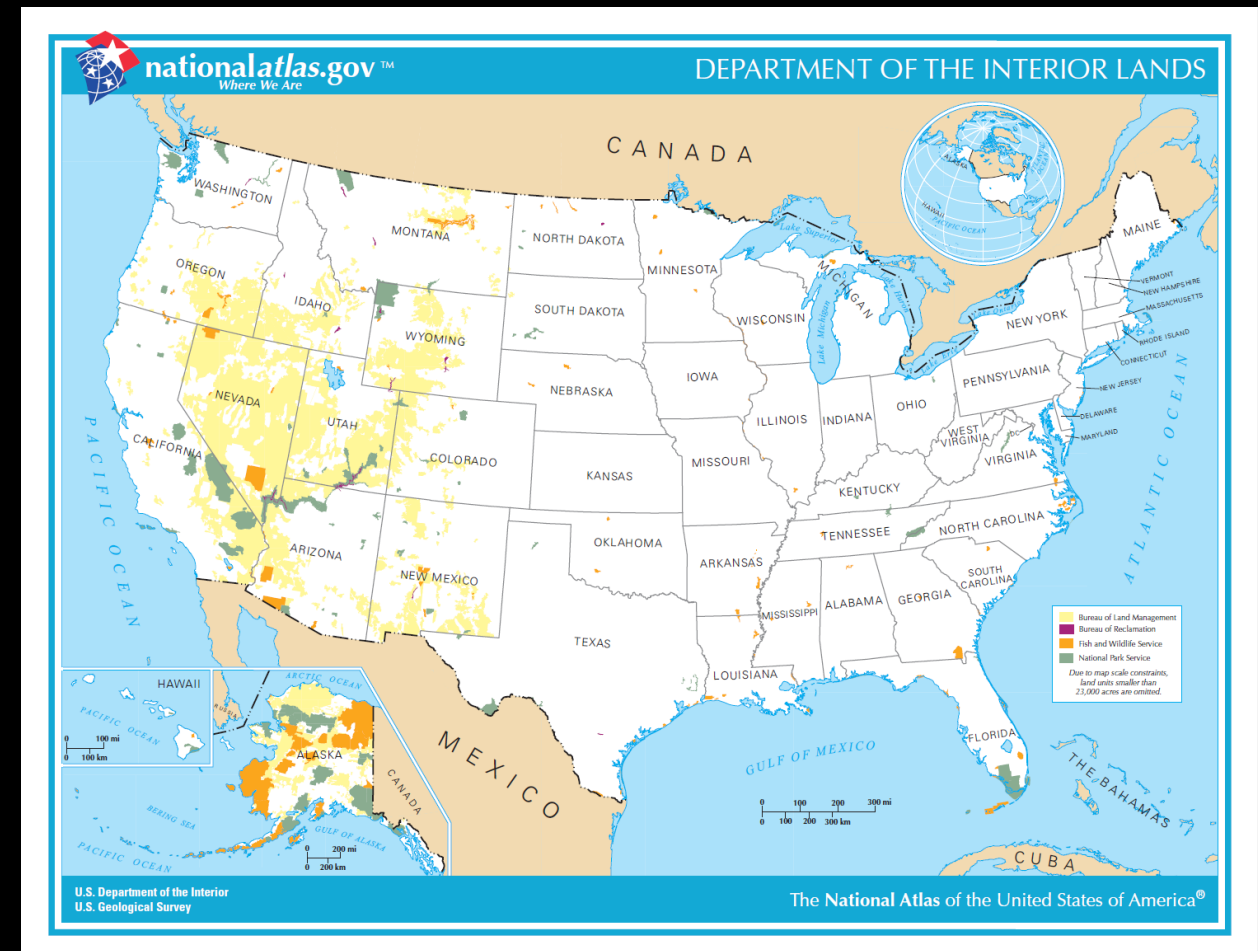


U.S. Department of the Interior Unmanned Aircraft Program

Science, Safety, Savings, Service

Who We are

- Bureau of Indian Affairs
- Bureau of Land Management
- Bureau of Ocean Energy Management
- Bureau of Reclamation
- Bureau of Safety and Environmental Enforcement
- National Park Service
- Office of Surface Mining Reclamation and Enforcement
- U.S. Fish and Wildlife Service
- U.S. Geological Survey



DOI Office of Aviation Services

Established by the Secretary of the Interior on July 1, 1973 to "Raise the safety standards, increase the efficiency, and promote the economical operation of aircraft activities in the Department of the Interior."





History of UAS in DOI

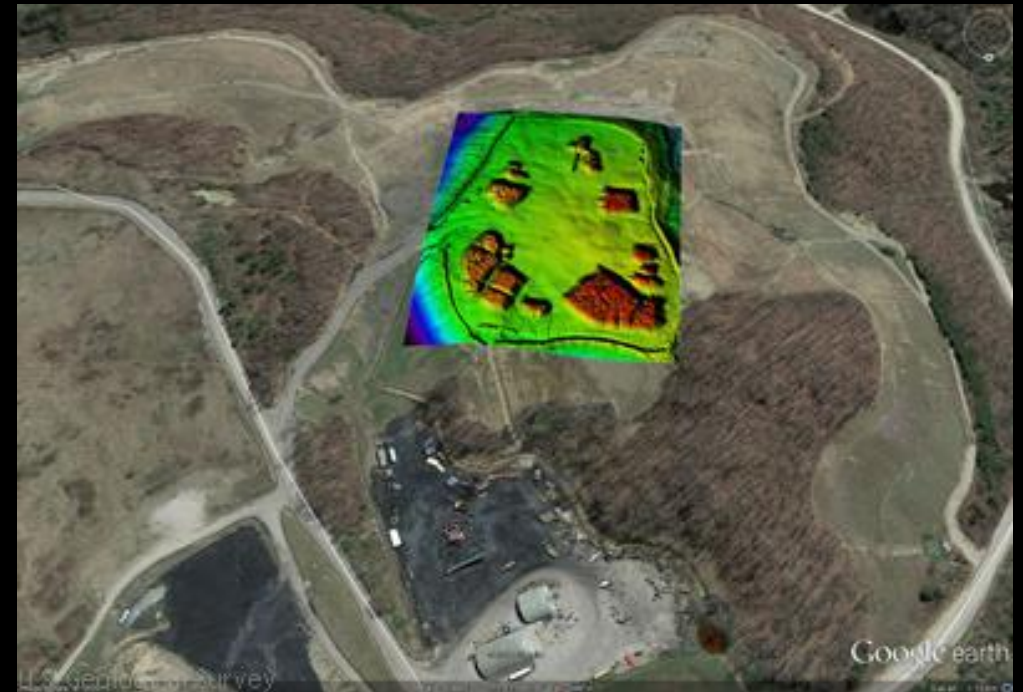
- Balloons
- R/C Airplanes
- Blimps
- 2006 Planning begins for UAS program
- Excess DOD aircraft operational (2009)
 - RQ-11 A/B Raven
 - RQ-16C T-Hawk (2011)
- Approved training Program(2012)
- Class G MOA with FAA(2013)





Why UAS?

- ✓ Manage 1 in every 5 acres
- ✓ Diverse mission set
- ✓ Remote areas
- ✓ Sensitive landscapes
- ✓ Threatened / endangered species
- ✓ Public land
- ✓ Public Safety
- ✓ Accessibility, affordability, capability



- Resolution
- Persistence
- Repeatable
- Sensors
- Analytics
- Decisions

Science

- Acquisition
- Operations
- Maintenance
- Infrastructure
- Training
- Replace labor intensive methods

Savings

Safety

- < Air exposure
- < Ground exposure
- Assess hazards (fire, flood, landslide, etc.)

Service

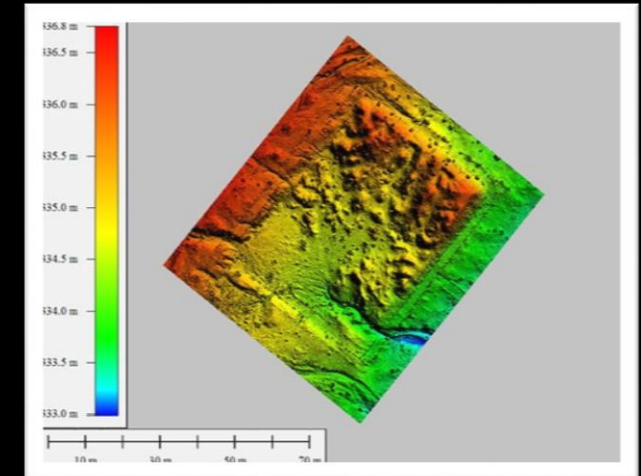
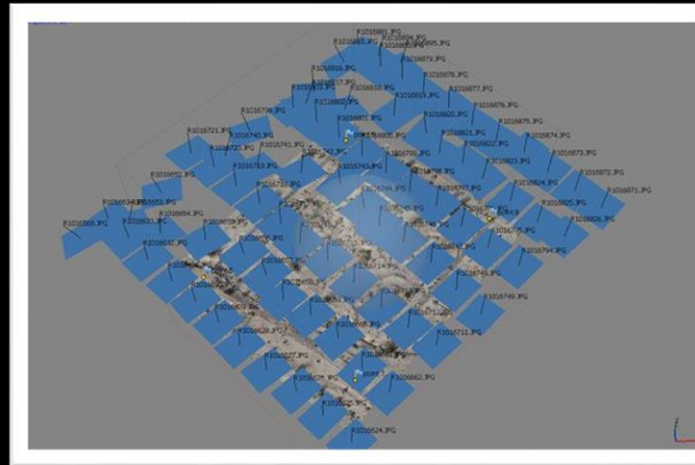
- Aviation for the masses
- Responsive
- Agile
- Flexible





DOI Use Cases

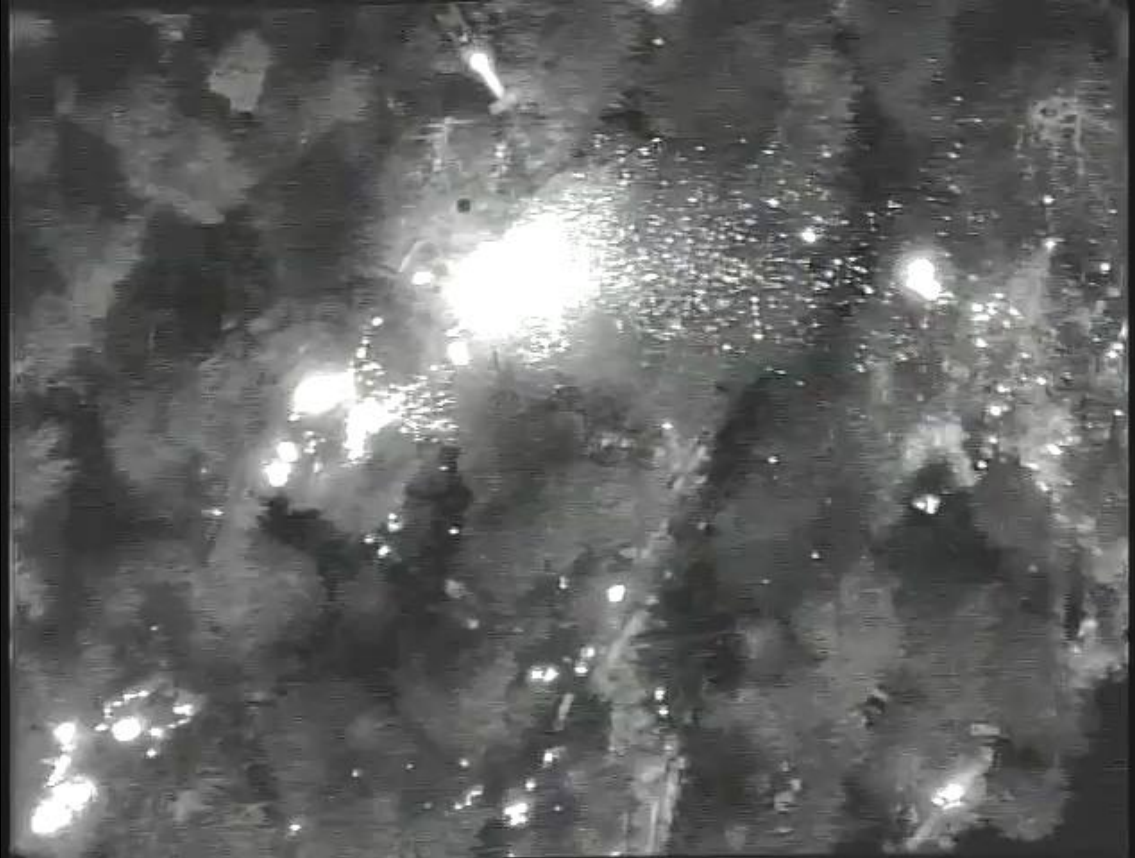
- Georeferenced HD aerial imagery
- Thermal IR
- Multispectral
- Classification
- Communications relay
- ISR
- Hyperspectral
- Tactical missions
- You name it, we do it



Sample Mission: Resource Management



Sample Mission: Fire Recon and Mapping



Sample Mission: Firefighting, Optionally Piloted



Sample Mission: Search and Rescue





Current DOI UAS Fleet and Bureaus

- 50+ 3DR SOLO
 - BLM
 - BOR
 - OSM
 - NPS
 - USGS
 - OAS
 - FWS
- 9 Each Falcon and Falcon Hover
 - BLM
 - USGS
 - OAS
- 1 Pulse Vapor 55
 - USGS
- 5 Martin UAV Super Bat
 - BLM



3DR SOLO

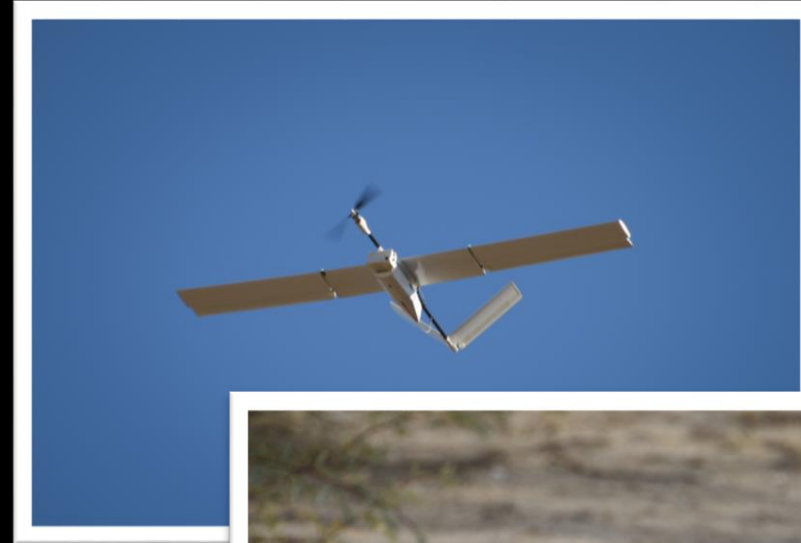
- Range .5 nm
- Max Endurance 20 min
- Cruise Speed 45 kts.
- Payload Max 1 lb.
- Radio Range .5nm
- Multiple Payload Options
 - GoPro
 - HD mapping
 - Multi-spectral
 - Thermal IR





Falcon/Falcon Hover

- Falcon
 - Range 6 nm
 - Max Endurance 90 min
 - Cruise Speed 45 kts
 - Payload Max 2.5 lbs
 - Minimum Runway 0 ft
- Hover
 - Range 2 nm
 - Max Endurance 30 min
 - Cruise Speed 15 kts
 - Payload Max 2.5 lbs
 - Minimum Runway 0 ft





Pulse Vapor 55

- Main Rotor: Diameter 90 in
- Maximum Takeoff: Weight 55 lbs
- Payload Weight: 10 lbs (33 lbs useful load)
- Endurance (Hover): 45 Minutes
- Endurance (Cruise): 60 Minutes
- Operational Radius: 5 Miles
- Cruise Speed: 25 mph
- Ceiling: 15,000 ft
- Take Off Type: Automatic Vertical Take Off
- Landing Type: Automatic Vertical Landing
- Payload Compatibility: HD EO/MWIR brushless camera ball, Riegl VUX-1 LiDAR with survey grade GNSS/IMU, High resolution aerial photography imagers





Martin UAV Super Bat

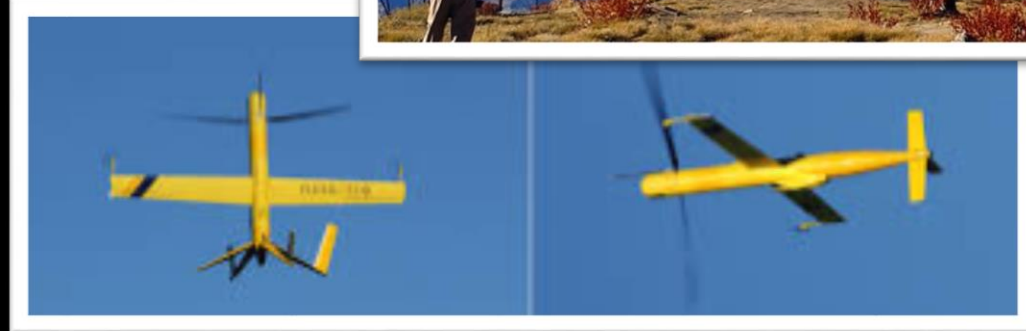
- Max Endurance 6 hrs
- Cruise Speed 40 kts
- Payload w/6 hrs fuel 5 lbs
- Minimum Runway 200 ft
- Radio Range 6-10
- IR, EO, High Resolution Imagery





Fire UAS Service Contract

- Targeting medium endurance aircraft (12-24 hour)
- EO/IR and mapping capability
- Real-time SA for ground personnel and fire managers
- Multi-award to access a variety of potential vendors





NextGen UAS for DOI

- More automation
- Multiple vehicles from single GCS
- Tactical actions
 - Fire
 - ACETA
 - SAR
- Cloud processing option
- RTK capability
- Multiple payloads



Legal & Regulatory Framework



“Aircraft” means any contrivance invented, used, or designed to navigate, or fly in, the air. 49 U.S. Code § 40102



Develop and oversee complaint Federal Aviation Regulations



Develop and oversee overarching DOI policies and programs.



Develop implementing Bureau policies and programs

Operational Procedures Memorandum OPM-11



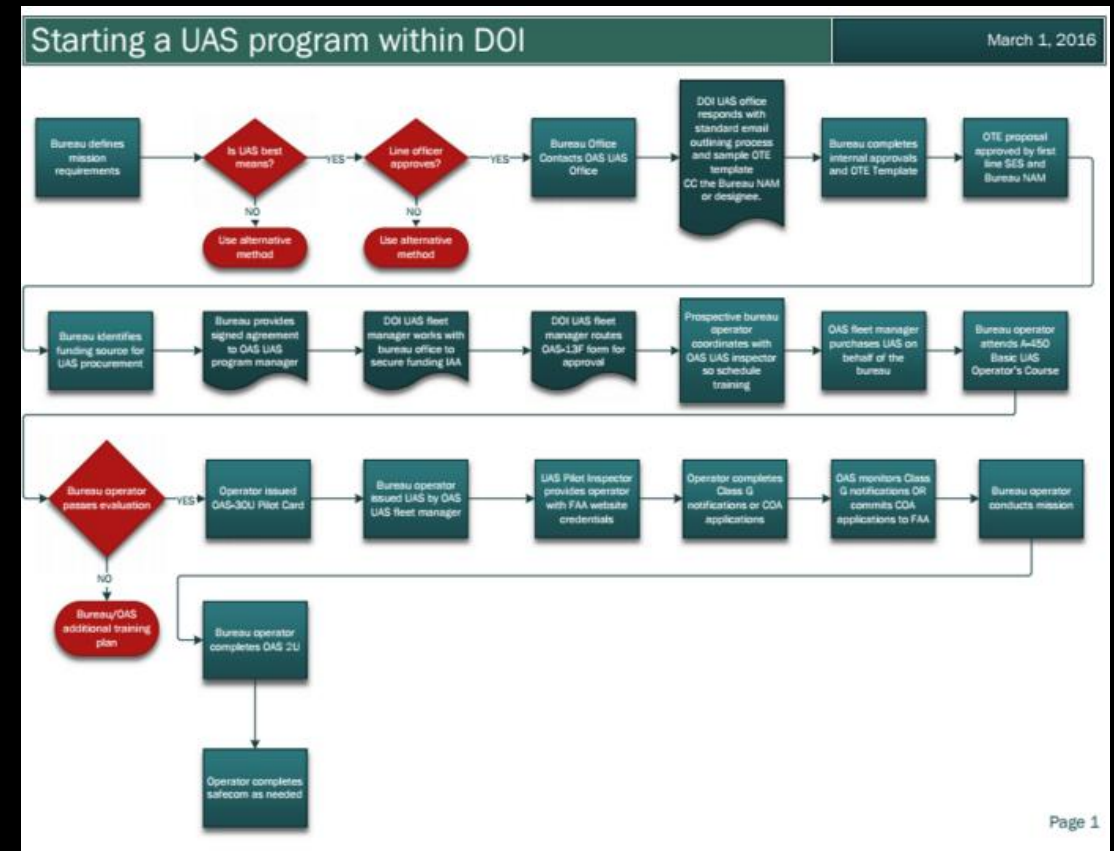
- Under revision to include part 107
- Raises the bar from the FAA baseline
- Approval process is a single document
- Includes rules of behavior for operators
- Compliant with Presidential Memorandum





UAS Approval Process

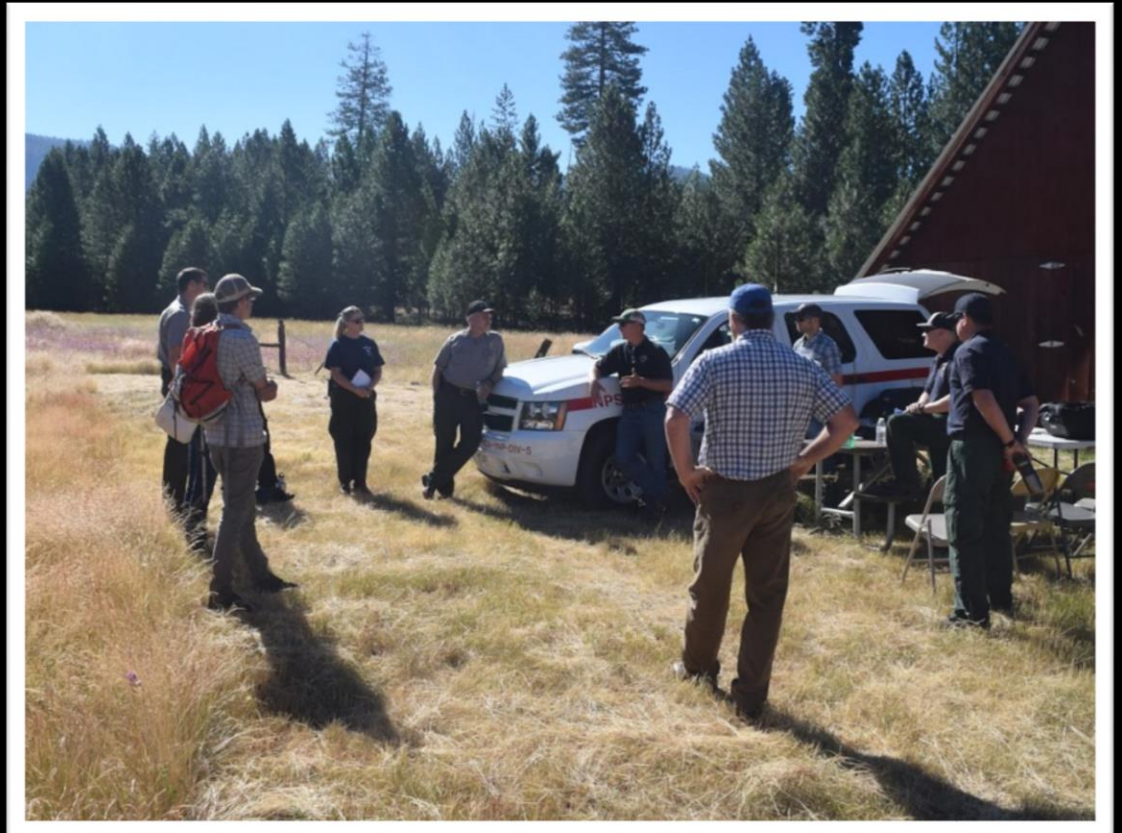
- Bureaus define the requirement
- OAS provides OTE document template to prospective operator
- Operator obtains aviation manager and senior executive approval
- Agreement completed to fund purchase
- Purchase made/training completed
- Program operational



Training Program



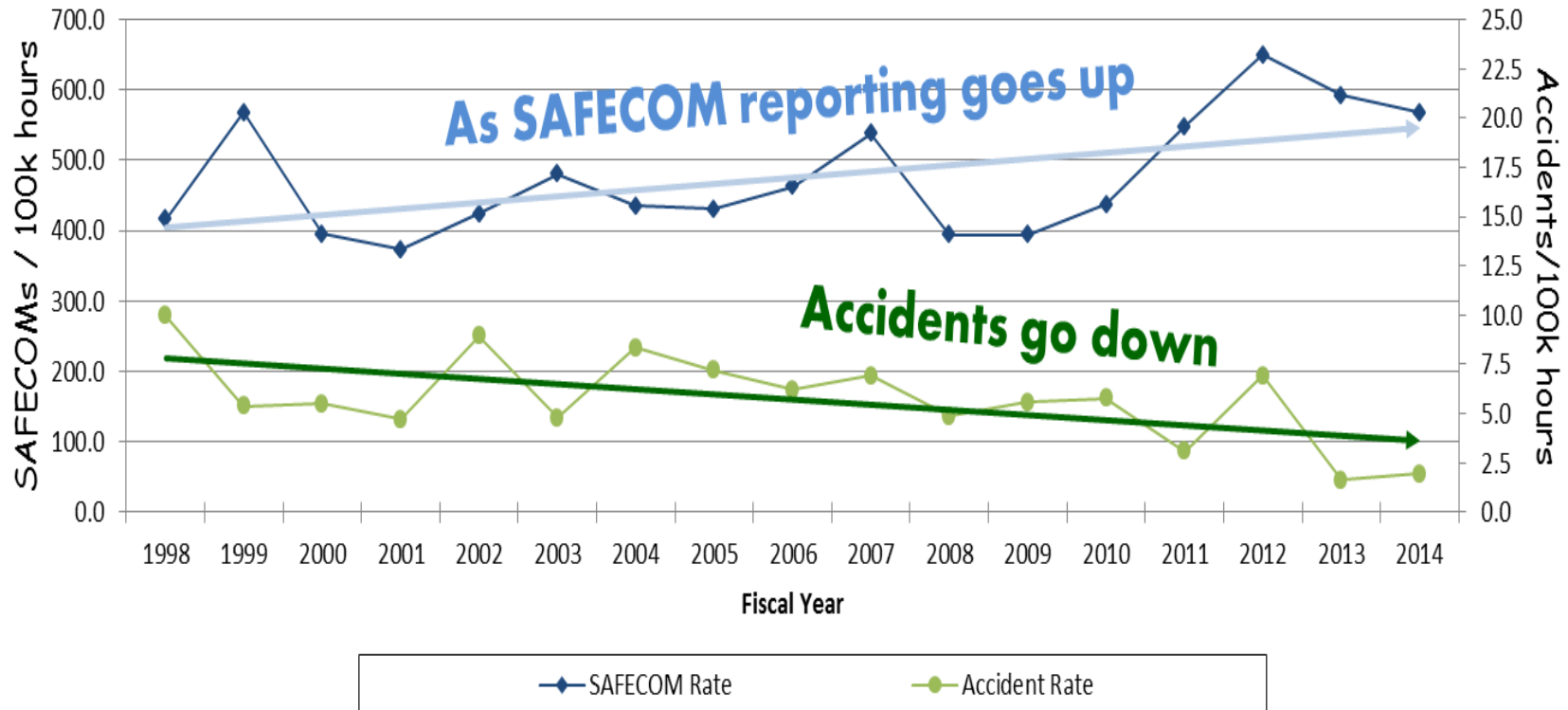
- 5-day course of instruction
- FAA Remote pilot will become the baseline requirement in 2017
- Basic training on Solo then make and model add-ons
- DOI will always have “higher” bar than min FAA requirements



Reporting = Safety

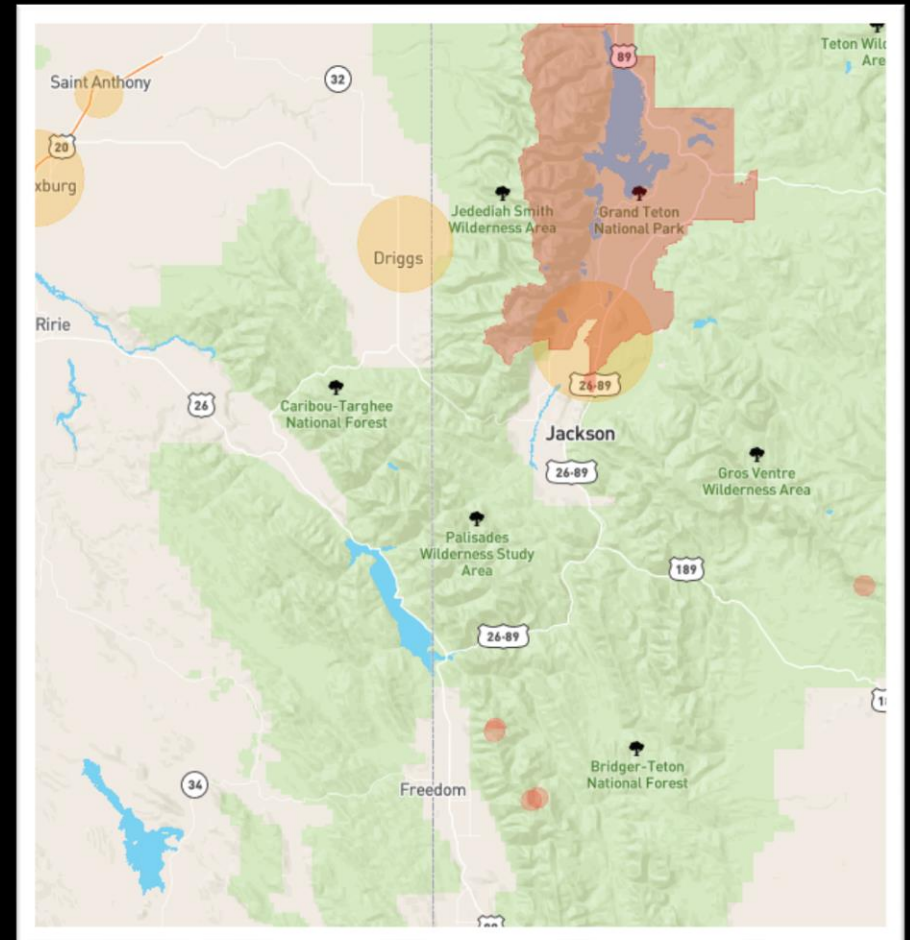


*Comparison of SAFECOM Reporting to
Accident Rates (1998-2014)*



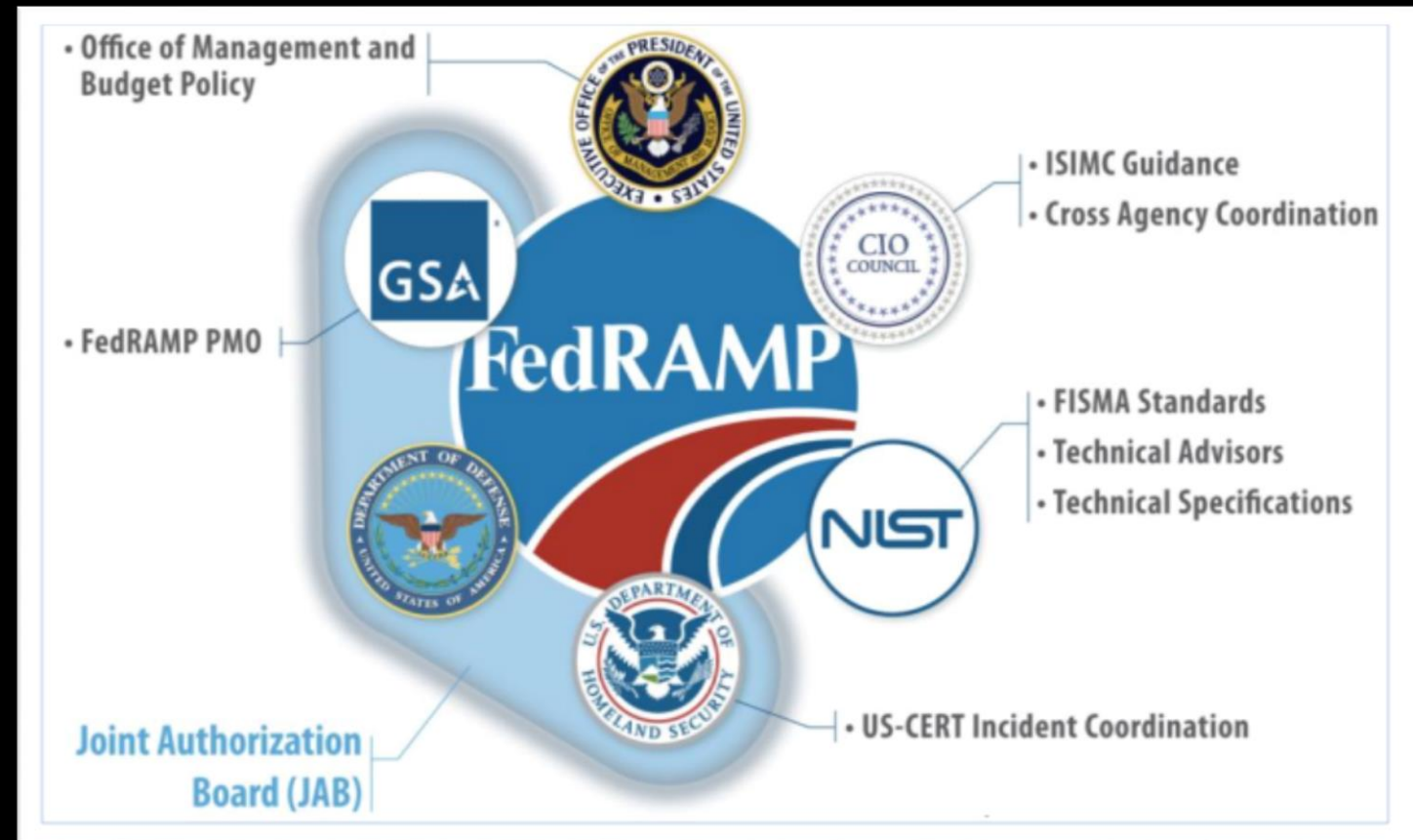
Notable Successes

- FAA approved small UAS training program
- DOI/FAA MOA for operations in class G airspace
- FAA/DOI agreement for beyond visual line of sight operations
- Standardization of fleet
 - Training
 - Equipment's
 - Sensors
- Interagency collaboration with other USG agencies
 - FAA
 - NASA
 - NOAA
 - DHS
 - USDA
- Data sharing to keep the civilian drones away from wildfires.



Challenges

- Data Management and processing (FedRAMP)
- Cloud processing security
- Educating the workforce
- Culture
- Lack of environmental data
- Full time UAS operators vs. collateral duty
- Acquisition cycle
- System dependability





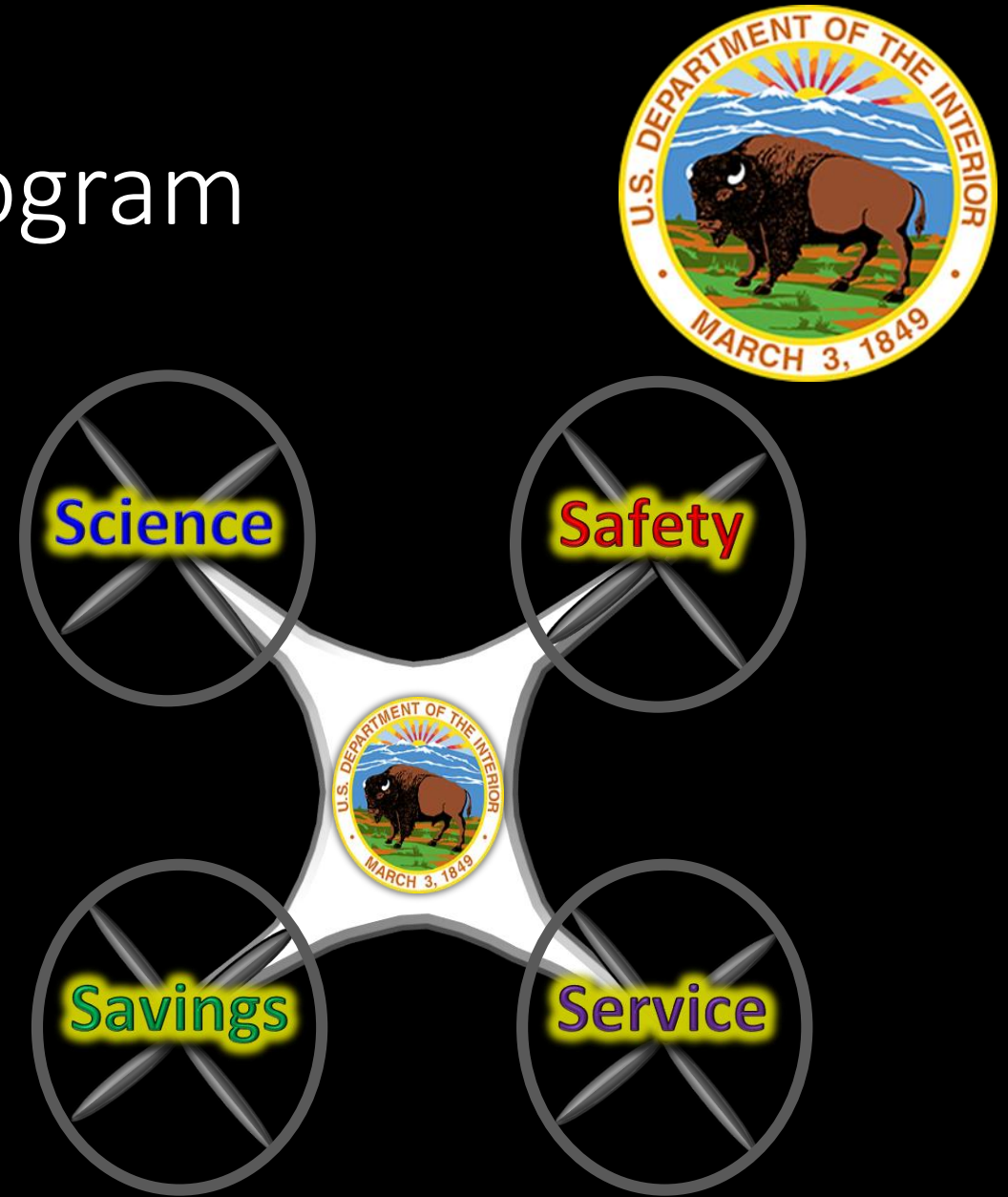
DOI Contracting

- Flight service
 - Exclusive Use
 - Call when Needed
- End product contracts
 - Data buy
 - No DOI operational control
 - Refers only to deliverables
- Purchase contracts

The screenshot displays the FedBizOpps.gov website. At the top, the header includes the text "FEDBIZOPPS.GOV" with a star icon, "Federal Business Opportunities", and logos for "E-GOV" and "USA.gov". Below the header is a navigation bar with links: "Home", "Getting Started", "General Info", "Opportunities", "Agencies", and "Privacy". The main content area features a search bar with the text "Search more than 35,100* active federal opportunities." Below this are several dropdown menus: "Posted Date:" (set to "Last 90 Days"), "Set-Aside Code:" (set to "Any"), "Place of Performance:" (set to "Any State or Territory"), and "Type:" (set to "Any"). There are also input fields for "Keyword / Solicitation #:" and "Agency:". A "Search" button is located below these fields. To the right of the search bar, there is a section titled "RECOVERY" with the text "Locate actions funded by the American Recovery and Reinvestment Act." and two buttons: "SEARCH RECOVERY OPPORTUNITIES" and "SEARCH RECOVERY AWARDS". Below this, there is a section titled "FBO RECOVERY REPORTS" with links to "Click here for Opportunities" and "Click here for Awards". At the bottom, there is a link to "Learn more about FBO recovery" and a small note: "* Notices posted within the last 90 days."

Future of the DOI UAS Program

- Contracting for UAS services will increase availability and decrease costs
- Automation will simplify data collection and processing
- Move into tactical missions
 - Cargo/water dropping
 - ACETA
 - Avalanche control
 - Aerial application
- Much more data available to the public





Discussion?

Contact

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[Doi.gov/aviation/uas](https://doi.gov/aviation/uas)

208-433-5091